

5.3 TRAFFIC AND CIRCULATION

This chapter describes the traffic analysis that was completed to determine whether or not secondary impacts would occur with the provision of additional dwelling units under Mitigation Measure SOCIO-1b. The results are presented in the same outline form included in Section 4.3 of this EIS to illustrate the effects of the additional mitigation measure (heretofore referred to as Mitigated Alternative 5).

A. Impact Discussion

1. Effects on Roadways

a. Trip Generation

The trip generation under the Mitigated Alternative 5 would be the same as Alternative 5 without mitigation with four exceptions:

- 810 student apartment and dormitory units would be provided in the NRP area, instead of 290 under Alternative 5.
- 4,459 square meters (48,000 square feet) of office would be removed from the NRP area (Historic District) to accommodate new dormitory units.
- 1,120 townhome and apartment units would be provided in Bay View instead of 750 included under Alternative 5.
- There would be 750 new NASA employees associated with the Ames Research Center. This number is the same as in the DPEIS, but the traffic analysis for the DPEIS mistakenly assumed 1,300 new ARC employees under Alternative 5.

The detailed daily and peak hour trip generation estimates for an average weekday are presented in Table 5.3-1, and daily estimates for both weekend days are shown in Table 5.3-2. The same housing and TDM percent reductions were applied to estimate the number of daily, AM peak and PM peak hour trips generated by Mitigated Alternative 5 as by Alternative 5 in the DPEIS. The additional dwelling units are expected to reduce overall trip generation to Moffett Field by providing housing for both project-generated

employees/students and existing employees at the NASA Ames Research Center.

Trip generation summaries are presented in Tables 5.3-3 and 5.3-4. Table 5.3-3 is in the same format as Tables 4.3-2 through 4.3-5 included in Volume II of the EIS. Mitigated Alternative 5 is expected to generate a total of 14,880 net new daily trips, 430 net new AM peak hour trips, and 785 net new PM peak hour trips. The TDM and housing reductions are applied to all uses with the western Moffett Field area including baseline uses, which results in the negative trip generation shown for inbound AM peak hour trips. Projected weekend trip generation under Mitigated Alternative 5 is 19,055 net new Saturday daily trips and 17,339 net new Sunday trips. These volumes are approximately 30 percent higher than the corresponding numbers for Alternative 5 described in the DPEIS. Table 5.3-5 below illustrates the comparison of each alternative.

Mitigated Alternative 5 would result in a significant trip reduction since it would internalize many trips within Moffett Field. The calculated trip reduction for average weekdays is 39 percent for daily trips and nearly 81 percent and 76 percent during the AM and PM peak hours, respectively. Table 5.3-6 (in the format of Table 2-4 from the DPEIS) compares the trip reduction due to both TDM and housing for each alternative.

b. Trip Distribution and Assignment

Trip distribution and assignment would be the same as presented in the Draft EIS.

c. Impact on Intersection Operations

Several intersections are projected to operate at less than acceptable levels even with the traffic reductions that are projected to occur under Mitigated Alternative 5. However, additional dwelling units would reduce the number of external peak hour trips generated outside Moffett Field and are expected to reduce intersection impacts. The only intersection to be significantly impacted even with the additional housing mitigation is the Moffett Boulevard-Clark

Table 5.3-1: Estimated Weekday Trip Generation for NASA Re-use Development

April 11, 2002

Alternative #5 w/ Additional Housing

Zone	Use	Size	Units	Rates						Trips										
				Daily	AM		Total	In	PM		Total	Daily	In	AM		Total	In	PM		Total
					Out	Out			Out	Out				Out	Out			Out	Out	
1 & 2	Apartment-Style Housing/Dorms	810 d.u.		9.66	0.20	1.08	1.28	1.01	0.50	1.50		7,825	166	871	1,037	814	401		1,215	
	n/a																			
3	Low Density R & D	90 ksf		9.02	1.03	0.21	1.24	0.18	1.00	1.18		812	93	19	112	16	90		106	
	Removal of Room 583 Motel Rooms	168 rooms		-10.43	-0.23	-0.41	-0.64	-0.31	-0.27	-0.58		-1,314	-35	-62	-97	-47	-41		-88	
4	High Density R & D	29 ksf		7.13	0.95	0.13	1.08	0.20	0.98	1.18		207	28	4	31	6	28		34	
5 & 8	High Density R&D (Univ.)	406 ksf		7.13	0.95	0.13	1.08	0.20	0.98	1.18		2,895	387	53	440	81	396		477	
	University Classrooms	662 students		2.38	0.17	0.04	0.21	0.06	0.15	0.21		1,576	111	28	139	42	97		139	
	High Density R&D (e/o Cody)	195 ksf		7.13	0.95	0.13	1.08	0.20	0.98	1.18		1,391	186	25	211	39	190		229	
6	High Density R & D (LMartin)	600 ksf		7.13	0.95	0.13	1.08	0.20	0.98	1.18		4,279	572	78	650	120	585		705	
7	Computer Museum	120 ksf		7.00	0.41	0.05	0.46	0.09	1.07	1.16		840	50	6	55	11	128		139	
9	High Density R & D	0 ksf		7.13	0.95	0.13	1.08	0.20	0.98	1.18		0	0	0	0	0	0		0	
10	High Density R & D	0 ksf		7.13	0.95	0.13	1.08	0.20	0.98	1.18		0	0	0	0	0	0		0	
11	High Density R & D	0 ksf		7.13	0.95	0.13	1.08	0.20	0.98	1.18		0	0	0	0	0	0		0	
12	n/a																			
	n/a																			
	n/a																			
	n/a																			
	Townhouse-Style Units	1120 d.u.		9.66	0.18	0.97	1.15	0.90	0.45	1.35		10,819	206	1,082	1,288	1,013	499		1,512	
13	Regional Fire Facility	0 ksf		4.22	0.60	0.11	0.70	0.11	0.60	0.70		0	0	0	0	0	0		0	
	Regional Fire Facility	0 rooms		2.38	0.17	0.04	0.21	0.06	0.15	0.21		0	0	0	0	0	0		0	
	n/a																			
	n/a																			
	Warehouse	0 ksf		4.12	0.37	0.08	0.45	0.11	0.34	0.44		0	0	0	0	0	0		0	
14	CMU, UCSC, ATCC, Other Shen U:	113 ksf		9.02	1.03	0.21	1.24	0.18	1.00	1.18		1,020	117	24	141	20	114		134	
	Ames Child Care	14 emp		5.36	0.51	0.06	0.57	0.06	0.51	0.57		75	7	1	8	1	7		8	
	Removal of Office Use	48 ksf		9.02	1.03	0.21	1.24	0.18	1.00	1.18		-528	-66	-9	-75	-12	-60		-72	
15	Conference/Training Rooms	250 rooms		9.38	0.51	0.38	0.89	0.46	0.48	0.94		2,345	130	94	224	115	120		235	
16	Historic Infill (HD R&D)	155 ksf		7.13	0.95	0.13	1.08	0.20	0.98	1.18		1,105	148	20	168	31	151		182	
17	Museum	500 ksf		6.11	0.41	0.05	0.45	0.09	1.02	1.11		3,055	203	23	225	44	511		555	
18	Space Camp (HD R&D)	70 ksf		6.11	0.41	0.05	0.45	0.09	1.02	1.11		428	28	3	32	6	71		78	
19	ARC (LD R&D)	290 ksf		8.47	0.99	0.20	1.19	0.17	0.95	1.11		2,458	287	59	345	78	274		323	
TDM Trip Reduction:				Bay View Total (Zone 12)								10,819	206	1,082	1,288	1,013	499		1,512	
				On-site Housing Trip Reduction								-3,787	-150	-787	-937	-736	-363		-1,099	
				TDM Trip Reduction								-1,547	-12	-65	-77	-61	-30		-91	
				Net Bayview Trips								5,485	44	230	274	216	106		322	
				Eastside/Airfield Total (Zone 13)								0	0	0	0	0	0		0	
				On-site Housing Trip Reduction								0	0	0	0	0	0		0	
				TDM Trip Reduction								0	0	0	0	0	0		0	
				Net East Side Airfield Trips								0	0	0	0	0	0		0	
				Ames Campus Total (Zone 19)								2,458	287	59	345	78	274		323	
				On-site Housing Trip Reduction								-777	-161	-31	-192	-74	-151		-225	
				TDM Trip Reduction								-370	-28	-6	-34	-1	-27		-21	
				Net Ames Campus Trips								1,311	98	22	119	3	96		76	
				NRP/ARC Total (Zones 1-11,14-19)								26,010	2,123	1,177	3,300	1,287	2,790		4,077	
				On-site Housing Trip Reduction								-8,487	-1,303	-797	-2,100	-1,083	-1,380		-2,463	
				TDM Trip Reduction								-3,855	-180	-84	-264	-45	-310		-355	
				Net NRP/ARC Trips								13,668	640	296	936	159	1,099		1,258	
				Total Gross Trips								39,287	2,616	2,317	4,933	2,378	3,563		5,911	
				Total Net Trips								20,464	781	548	1,329	378	1,302		1,656	

Note: The number of conference rooms was estimated based on the square footage for Alternative 5 and compared to the numbers for the other alternatives. Since the trip generation rate for this use was not based on any standard rate, the estimate should be considered conservative.

Table 5.3-2: Estimated Weekend Trip Generation for NASA Re-use Development

April 11, 2002

Alternative #5 w Additional Housing

Zone	Use	Size	Units	Rates		Trips	
				Saturday	Sunday	Saturday	Sunday
1 & 2	Apartment-Style Housing	810	d.u.	6.39	5.86	5,176	4,747
	n/a						
3	Low Density R & D	90	ksf	1.90	1.11	171	100
	Removal of Room 583 Motel Rooms	168	rooms	-8.84	-7.39	-1,114	-931
4	High Density R & D	29	ksf	2.37	0.98	69	28
5 & 8	High Density R&D (Univ.)	406	ksf	2.37	0.98	962	398
	University Classrooms	662	students	1.30	1.30	861	861
	High Density R&D (e/o Cody)	195	ksf	2.37	0.98	462	191
6	High Density R & D (LMartin)	600	ksf	2.37	0.98	1,422	588
7	Computer Museum	120	ksf	10.36	10.36	1,243	1,243
9	n/a						
10	n/a						
11	n/a						
12	n/a						
	n/a						
	n/a						
	n/a						
	Townhouse-Style Units	1120	d.u.	6.39	5.86	7,157	6,563
13	Regional Fire Facility	0	ksf	2.11	2.11	0	0
	Regional Fire Facility	0	rooms	2.38	2.38	0	0
	n/a						
	n/a						
	Warehouse	0	ksf	1.22	0.79	0	0
14	CMU, UCSC, ATCC, Other Shen Us	113	ksf	1.90	1.11	215	125
	Ames Child Care	14	emp	0.00	0.00	0	0
	Removal of Office Use	48	ksf	1.90	1.11	-91	-53
15	Conference/Training Rooms	250	rooms	2.35	2.35	588	588
16	Historic Infill (HD R&D)	155	ksf	2.37	0.98	367	152
17	Museum	500	ksf	8.93	8.93	4,465	4,465
18	Space Camp (HD R&D)	70	ksf	2.37	0.98	166	69
19	ARC (LD R&D)	290	ksf	1.90	1.11	551	322
TDM Trip Reduction:				<i>Bay View Total (Zone 12)</i>		7,157	6,563
				<i>On-site Housing Trip Reduction</i>		-716	-656
	All Areas but East Airfield			<i>TDM Trip Reduction</i>		-386	-354
	6.0%			<i>Net Bayview Trips</i>		6,055	5,552
	East Airfield			<i>Eastside/Airfield Total (Zone 13)</i>		0	0
	2.0%			<i>On-site Housing Trip Reduction</i>		0	0
				<i>TDM Trip Reduction</i>		0	0
				<i>Net East Side Airfield Trips</i>		0	0
				<i>Ames Campus Total (Zone 19)</i>		551	322
				<i>On-site Housing Trip Reduction</i>		0	0
				<i>TDM Trip Reduction</i>		-33	-19
				<i>Net Ames Campus Trips</i>		518	303
				<i>NRP/ARC Total (Zones 1-11,14-19)</i>		14,520	12,568
				<i>On-site Housing Trip Reduction</i>		-518	-475
				<i>TDM Trip Reduction</i>		-840	-726
				<i>Net NRP/ARC Trips</i>		13,163	11,368
				<i>Total Gross Trips</i>		22,228	19,454
				<i>Total Net Trips</i>		19,735	17,223

Table 5.3-3 AM/PM Trip Generation Summary - Alternative 5 w/ Additional Housing

	Weekday Trips						
	Daily	In	<u>AM</u>	Total	In	<u>PM</u>	Total
			Out			Out	
<i>Bay View Total</i>	10,819	206	1,082	1,288	1,013	499	1,512
<i>On-site Housing Reduction</i>	-3,787	-150	-787	-937	-736	-363	-1,099
<i>TDM Trip Reductions</i>	-1,547	-12	-65	-77	-61	-30	-91
<i>Net Bayview Trips</i>	5,485	44	230	274	216	106	322
<i>East Side Airfield Total</i>	0	0	0	0	0	0	0
<i>On-site Housing Reduction</i>	0	0	0	0	0	0	0
<i>TDM Trip Reductions</i>	0	0	0	0	0	0	0
<i>Net Eastside/Airfield Trips</i>	0	0	0	0	0	0	0
<i>Ames Campus Total</i>	2,458	287	59	345	78	274	323
<i>On-site Housing Reduction</i>	-777	-161	-31	-192	-74	-151	-225
<i>TDM Trip Reductions</i>	-286	-21	-5	-26	-4	-21	-25
<i>Net Ames Campus Trips</i>	1,311	98	22	119	3	96	76
<i>NRP Total</i>	20,163	1,257	1,102	2,359	1,169	1,995	3,165
<i>On-site Housing Reduction</i>	-8,487	-1,303	-797	-2,100	-1,083	-1,380	-2,463
<i>TDM Trip Reductions</i>	-3,592	-141	-80	-222	-40	-274	-314
<i>Net NRP Trips</i>	8,084	-188	225	37	47	341	387
Total Net Trips	14,880	-46	476	430	266	543	785

April 11, 2002

TABLE 5.3-4 **WEEKEND TRIP GENERATION SUMMARY - ALTERNATIVE 5
WITH ADDITIONAL HOUSING**

	Daily Trips	
	Saturday	Sunday
Bay View Total	7,157	6,563
On-site Housing Reduction	-716	-656
TDM Trip Reductions	-386	-354
<i>Net Bayview Trips</i>	6,055	5,552
East Side Airfield Total	0	0
On-site Housing Reduction	0	0
TDM Trip Reductions	0	0
<i>Net Eastside/Airfield Trips</i>	0	0
Ames Campus Total	551	322
On-site Housing Reduction	0	0
TDM Trip Reductions	-33	-19
<i>Net Ames Campus Trips</i>	518	303
NRP Total	13,826	12,686
On-site Housing Reduction	-518	-475
TDM Trip Reductions	-826	-728
<i>Net NRP Trips</i>	12,483	11,484
Total Net Trips	19,055	17,339

TABLE 5.3-5 **COMPARISON OF PROJECT TRIP GENERATION - ALL ALTERNATIVES**

	Total Net New Trips						
	Daily	<u>AM</u>			<u>PM</u>		
		In	Out	Total	In	Out	Total
Alternative 1 (No Project)	5,584	827	72	899	112	759	871
Alternative 2	22,455	1,521	464	1,986	485	1,803	2,289
Alternative 3	15,895	1,255	365	1,622	517	1,725	2,183
Alternative 4	27,580	2,105	592	2,696	624	2,456	3,079
Alternative 5	14,366	611	402	1,012	313	1,093	1,407
Mitigated Alternative 5	14,880	-46	476	430	266	543	785

Memorial Drive/R.T. Jones Road intersection. A summary of the LOS analyses is presented in Table 5.3-7.

d. Effect of Charleston Avenue Bridge

The bridge is still not required to mitigate any project intersection impacts. The smaller amount of external traffic generated by additional on-site dwelling units would further lessen the need for the bridge. Increased trip internalization due to the additional housing would provide additional capacity on Moffett Boulevard for other trips (e.g., to and from North of Bayshore area) if the bridge were constructed. Construction of additional housing would not preclude construction of the bridge.

TABLE 5.3-6: **TDM AND HOUSING TRIP REDUCTIONS**

Daily Trips	Westside		Eastside/Airfield	
	TDM	Housing	TDM	Housing
Alternative 1	4.5%	N/A	N/A	N/A
Alternative 2	22.3%	17.3%	5.5%	7.7%
Alternative 3	23.6%	14.6%	5.6%	6.5%
Alternative 4	21.5%	17.1%	5.5%	8.1%
Alternative 5	20.0%	26.3%	N/A	N/A
Mitigated Alternative 5	16.5%	39.0%	N/A	N/A
AM Peak Hour				
Alternative 1	4.5%	N/A	N/A	N/A
Alternative 2	20.0%	32.8%	4.7%	22.2%
Alternative 3	21.9%	28.2%	5.1%	14.6%
Alternative 4	19.3%	30.5%	4.8%	20.7%
Alternative 5	15.6%	52.7%	N/A	N/A
Mitigated Alternative 5	8.4%	80.9%	N/A	N/A
PM Peak Hour				
Alternative 1	4.5%	N/A	N/A	N/A
Alternative 2	19.2%	32.2%	4.4%	26.6%
Alternative 3	21.0%	25.1%	5.0%	17.3%
Alternative 4	18.6%	30.2%	4.5%	24.9%
Alternative 5	15.1%	49.5%	N/A	N/A
Mitigated Alternative 5	8.5%	75.7%	N/A	N/A

Notes: The highlighted portions of this table represent a revision of DPEIS Table 2-4.

N/A = Not applicable because the indicated use would not be built.

Percentages represent the proportion compared to gross trip generation.

The variation in the net TDM reduction is caused by the fact that the housing reduction is taken first. The housing reduction varies because the amount and type of housing varies among alternatives. Next, a TDM reduction of 22 percent is applied to the net external trips (gross trips less the housing reduction). Thus, the higher the housing-related reduction, the lower the TDM percentage.

Source: Fehr and Peers Associates.

NASA AMES RESEARCH CENTER
NASA AMES DEVELOPMENT PLAN
FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT
ANALYSIS OF MITIGATED ALTERNATIVE 5

TABLE 5.3-7 **YEAR 2013 CUMULATIVE CONDITIONS WITH AND WITHOUT THE MITIGATED ALTERNATIVE 5**

Intersection	Year 2013 Cumulative Without Alternative 5			Year 2013 Cumulative Plus Alternative 5 w/ Additional Housing		
	Peak Hour	Delay (sec) ¹	LOS ²	Delay (sec)	LOS	Change in Delay ³
Middlefield Road/ Shoreline Boulevard	AM	<i>48.5</i>	<i>E</i>	48.5	E	+0.0
	PM	<i>48.5</i>	<i>E</i>	48.6	E	+0.0
Moffett Boulevard/ Central Expressway	AM	48.0	E	49.1	E	+1.0
	PM	53.4	E	56.7	E-	+3.2
Moffett Boulevard/ Middlefield Road	AM	36.1	D	36.8	D	+1.0
	PM	36.1	D	38.2	D-	+3.0
Moffett Boulevard/ SR 85 NB Ramp	AM	11.3	B	11.5	B	+0.2
	PM	5.6	B+	5.9	B+	-0.1
Moffett Boulevard/ US 101 SB Ramps	AM	10.3	B	10.5	B	+2.1
	PM	12.1	B	15.1	C+	+6.0
Moffett Boulevard/ US 101 NB Ramps	AM	10.6	B	10.1	B	+1.5
	PM	11.2	B	11.7	B	-5.1
Moffett Blvd. (Clark Road)/R.T. Jones Road	AM	<i>63.8</i>	<i>F</i>	73.4	F	+9.5
	PM	<i>196.6</i>	<i>F</i>	295.5	F	+99.1
Whisman Road/ Middlefield Road	AM	13.6	B-	13.6	B-	-0.1
	PM	15.1	C+	15.2	C+	-6.6
Ellis Street/ Middlefield Road	AM	21.6	C	22.0	C	+0.7
	PM	17.2	C	17.8	C	+0.8
Ellis Street/ US 101 SB Ramps	AM	21.3	C	23.4	C-	+1.2
	PM	16.8	C+	18.0	C	+1.4
Ellis Street/ US 101 NB Ramps	AM	18.2	C	18.3	C	-0.1
	PM	11.8	B	12.1	B	+0.2
Ellis Street/ Manila Drive	AM	10.8	B	10.9	B	+0.1
	PM	20.5	C	24.4	C	+4.0
Middlefield Road/ SR 237 WB Ramps	AM	15.3	C+	15.3	C+	-0.1
	PM	19.4	C	19.9	C	+1.6
Middlefield Road/ SR 237 EB Ramps	AM	19.3	C	19.1	C	+0.0
	PM	12.7	B	12.6	B	-0.1
Manila Drive/ H Street	AM	7.1	B	7.1	B	0.0
	PM	11.0	B	11.0	B	0.0
Mathilda Avenue/ SR 237 EB Ramps	AM	<i>100.5</i>	<i>F</i>	101.9	F	+1.5
	PM	17.3	C	17.4	C	+0.0
Mathilda Avenue/ SR 237 WB Ramps	AM	<i>284.6</i>	<i>F</i>	283.6	F	-1.0
	PM	<i>> 360</i>	<i>F</i>	<i>> 360</i>	F	+167.5
Manila Drive (Moffett Park Ext.)/Mathilda Avenue	AM	<i>> 360</i>	<i>F</i>	<i>> 360</i>	F	0.0
	PM	<i>339.3</i>	<i>F</i>	344.3	F	+5.7
Central Expressway/ Mary Avenue	AM	<i>67.2</i>	<i>F</i>	66.9	F	-0.3
	PM	52.2	E	55.0	E	+7.8

Note: Unacceptable operations without the project are shown in italics, while significant impacts are highlighted in bold and highlighted text.

¹ Whole intersection weighted average stopped delay expressed in seconds per vehicle (sec/veh) for signalized intersections, and total control delay in sec/veh for unsignalized intersections.

² LOS calculations for signalized intersections performed using the 1985 *Highway Capacity Manual* methodology contained in the TRAFFIX software package with adjusted saturation flow rates to reflect local conditions.

³ LOS calculations for unsignalized intersections performed using the 1997 *Highway Capacity Manual* methodology contained in the TRAFFIX software package.

⁴ Change in average critical delay between Background and Project Conditions.

⁵ Change in critical volume/capacity (V/C).

e. Effects on Freeways

The methodology used in the DPEIS was used to determine the effect of Mitigated Alternative 5 on freeway operations. The addition of housing units and the reduced number of external vehicle trips would lessen project impacts.

However, significant impacts are still projected to occur on all segments of Highway 101, SR 85, and SR 237 near the site in at least one direction during the AM and /or PM peak hour. Under Mitigated Alternative 5, project trips would add between at least one percent and 3.5 percent of capacity on all nearby segments, as shown on Table 5.3-8. Alternative 5 in the DEIS was expected to result in increases of up to eight percent on some segments near the site.

A substantial benefit of the addition of more housing would be a reduction in the number of significantly impacted external study freeway segments from nine (under Alternative 5 in the DPEIS) to three, as shown in Table 5.3-9. These results compare favorably to the 16 or more significantly impacted segments under Alternatives 2, 3 and 4.

f. Construction Traffic Impacts

Expected to be the same for all build alternatives requiring fill in Bay View.

2. Effects on Public Transit

The additional on-site housing could reduce the demand for transit service, especially during the peak hour, since on-site residents could travel to and from on-site employment by using shuttles and bicycles or by walking. Overall, fewer trips from external locations would be made, which is illustrated by a lower TDM reduction for Alternative 5 with additional housing. The increased number of working spouses in the additional dwelling units would also generate transit demand, but this demand is expected to be less than the number of external trips reduced. It is important to note that transit demand would likely be higher on weekends, since there would be substantially more

Table 5.3-8
Freeway Segment Analysis-Alternative 5 w/ Additional Housing (Nearby Locations)

		Year 2013 Baseline ¹							2013 Project Alt. 5 w Add'l Housing					
			Peak	Average					Project					
Freeway	Segment	Direction	Hour	Lanes	Volume	Speed	Density	LOS ²		Trips	Volume	Density	LOS ²	% Impact
US 101	Moffett to SR 85	NB	AM	3	4,235	15	94.1	F		66	4,302	95.6	F	0.96
US 101	Moffett to SR 85	NB	PM	3	4,945	15	109.9	F		143	5,088	113.1	F	2.08
US 101	Moffett to SR 85	SB	AM	3	7,473	50	49.8	E		92	7,565	50.4	E	1.33
US 101	Moffett to SR 85	SB	PM	3	6,353	55	38.5	D		52	6,405	38.8	D	0.75
US 101	Moffett to SR 85	NB HOV	AM	1	1,433	15	95.5	F		23	1,456	97.0	F	1.25
US 101	Moffett to SR 85	NB HOV	PM	1	2,130	40	53.3	E		62	2,192	54.8	E	3.43
US 101	Moffett to SR 85	SB HOV	AM	1	1,950	60	32.5	D		24	1,974	32.9	D	1.33
US 101	Moffett to SR 85	SB HOV	PM	1	1,540	60	25.7	D		12	1,553	25.9	D	0.69
US 101	SR 237 to Moffett	NB	AM	3	4,483	15	99.6	F		213	4,695	104.3	F	3.08
US 101	SR 237 to Moffett	NB	PM	3	4,837	25	64.5	F		122	4,959	66.1	F	1.76
US 101	SR 237 to Moffett	SB	AM	3	5,305	25	70.7	F		168	5,473	73.0	F	2.43
US 101	SR 237 to Moffett	SB	PM	3	6,604	55	40.0	D		422	7,025	42.6	D	6.11
US 101	SR 237 to Moffett	NB HOV	AM	1	1,630	20	81.5	F		77	1,707	85.4	F	3.36
US 101	SR 237 to Moffett	NB HOV	PM	1	1,483	60	24.7	D		37	1,521	25.3	D	1.62
US 101	SR 237 to Moffett	SB HOV	AM	1	1,736	60	28.9	D		55	1,791	29.9	D	2.39
US 101	SR 237 to Moffett	SB HOV	PM	1	1,401	60	23.3	C		89	1,490	24.8	D	3.89
US 101	Mathilda to SR 237	NB	AM	3	5,190	20	86.5	F		109	5,299	88.3	F	1.58
US 101	Mathilda to SR 237	NB	PM	3	5,398	60	30.0	D		67	5,465	30.4	D	0.97
US 101	Mathilda to SR 237	SB	AM	3	6,896	50	46.0	D		92	6,988	46.6	E	1.33
US 101	Mathilda to SR 237	SB	PM	3	5,709	60	31.7	D		212	5,921	32.9	D	3.07
US 101	Mathilda to SR 237	NB HOV	AM	1	1,960	35	56.0	F		41	2,001	57.2	F	1.79
US 101	Mathilda to SR 237	NB HOV	PM	1	1,285	60	21.4	C		16	1,301	21.7	C	0.69
US 101	Mathilda to SR 237	SB HOV	AM	1	1,796	60	29.9	D		24	1,820	30.3	D	1.04
US 101	Mathilda to SR 237	SB HOV	PM	1	1,444	60	24.1	D		53	1,497	25.0	D	2.33
SR 85	Central Expwy to US 101	NB	AM	2	3,469	20	86.7	F		82	3,551	88.8	F	1.79
SR 85	Central Expwy to US 101	NB	PM	2	2,233	65	17.2	C		58	2,291	17.6	C	1.25
SR 85	Central Expwy to US 101	SB	AM	2	1,672	65	12.9	B		64	1,736	13.4	B	1.39
SR 85	Central Expwy to US 101	SB	PM	2	3,777	25	75.5	F		157	3,934	78.7	F	3.42
SR 85	Central Expwy to US 101	NB HOV	AM	1	1,076	65	16.5	C		26	1,101	16.9	C	1.11
SR 85	Central Expwy to US 101	NB HOV	PM	1	558	65	8.6	A		14	573	8.8	A	0.63
SR 85	Central Expwy to US 101	SB HOV	AM	1	836	65	12.9	B		32	868	13.4	B	1.39
SR 85	Central Expwy to US 101	SB HOV	PM	1	854	65	13.1	B		36	889	13.7	B	1.55
SR 237	Maude to US 101	WB	AM	2	3,333	60	27.8	D		16	3,349	27.9	D	0.35
SR 237	Maude to US 101	WB	PM	2	4,622	55	42.0	D		68	4,690	42.6	D	1.48
SR 237	Maude to US 101	EB	AM	2	3,513	25	70.3	F		72	3,585	71.7	F	1.57
SR 237	Maude to US 101	EB	PM	2	1,809	65	13.9	B		7	1,816	14.0	B	0.15
SR 237	US 101 to Mathilda	WB	AM	2	4,129	60	34.4	D		133	4,262	35.5	D	2.89
SR 237	US 101 to Mathilda	WB	PM	2	4,482	55	40.7	D		72	4,554	41.4	D	1.57
SR 237	US 101 to Mathilda	EB	AM	2	2,799	15	93.3	F		101	2,900	96.7	F	2.20
SR 237	US 101 to Mathilda	EB	PM	2	3,092	60	25.8	D		233	3,325	27.7	D	5.07
SR 237	Mathilda to N. Fair Oaks	WB	AM	2	3,944	60	32.9	D		94	4,039	33.7	D	2.05
SR 237	Mathilda to N. Fair Oaks	WB	PM	2	4,746	55	43.1	D		65	4,811	43.7	D	1.42
SR 237	Mathilda to N. Fair Oaks	EB	AM	2	3,642	25	72.8	F		105	3,747	74.9	F	2.28
SR 237	Mathilda to N. Fair Oaks	EB	PM	2	2,713	60	22.6	C		241	2,954	24.6	D	5.24
SR 237	Mathilda to N. Fair Oaks	EB HOV	AM	1	1,780	60	29.7	D		43	1,822	30.4	D	1.85
SR 237	Mathilda to N. Fair Oaks	EB HOV	PM	1	696	65	10.7	B		10	706	10.9	B	0.42

Notes:

¹ Lanes and speed from VTA 2000 CMP Monitoring Data with 0.5 percent growth factor per year applied to the volumes. Baseline volumes also include trips associated with the CUP.

² LOS based on density presented in CMP monitoring report.

Significant and potentially significant impacts are indicated in **bold**.

Table 5.3-9
Freeway Segment Analysis-Alternative 5 w/ Additional Housing (External Locations)

Freeway	Segment	Peak Hour	Existing LOS		Incl. HOV in 2013?	Mixed-Flow Lanes		1% of Capacity		Project Trips		% of Capacity		Potentially Significant Impact?	
			NB/EB	SB/WB		NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB
SR 85	Homestead to Fremont	AM	F	D	Y	2	2	44	44	54	5	1.2%	0.1%	YES	No
		PM	D	E	Y	2	2	44	44	5	69	0.1%	1.6%	No	YES
SR 85	Winchester to Saratoga	AM	F	D	Y	2	2	44	44	27	2	0.6%	0.1%	No	No
		PM	D	F	Y	2	2	44	44	2	34	0.1%	0.8%	No	No
SR 85	Almaden to Camden	AM	E	D	Y	2	2	44	44	14	1	0.3%	0.0%	No	No
		PM	D	D	Y	2	2	44	44	1	17	0.0%	0.4%	No	No
SR 17	Bear Creek to SR 9	AM	F	C	N	2	2	44	44	6	1	0.1%	0.0%	No	No
		PM	C	F	N	2	2	44	44	1	8	0.0%	0.2%	No	No
SR 87	Curtner to Almaden	AM	F	C	Y	2	2	44	44	8	1	0.2%	0.0%	No	No
		PM	D	F	Y	2	2	44	44	1	10	0.0%	0.2%	No	No
SR 87	Julian to Taylor	AM	F	B	Y	2	2	44	44	22	2	0.5%	0.0%	No	No
		PM	C	D	Y	2	2	44	44	2	28	0.0%	0.6%	No	No
US 101	Cochrane to Scheller	AM	F	C	N	3	3	69	69	6	1	0.1%	0.0%	No	No
		PM	D	D	N	3	3	69	69	1	8	0.0%	0.1%	No	No
US 101	Tully to Story	AM	F	C	Y	3	3	69	69	22	2	0.3%	0.0%	No	No
		PM	D	F	Y	3	3	69	69	2	28	0.0%	0.4%	No	No
US 101	McKee to Old Oakland	AM	F	C	Y	3	3	69	69	44	4	0.6%	0.1%	No	No
		PM	C	E	Y	3	3	69	69	4	55	0.1%	0.8%	No	No
US 101	DeLaCruz to Montague	AM	E	D	Y	3	3	69	69	54	5	0.8%	0.1%	No	No
		PM	D	F	Y	3	3	69	69	5	69	0.1%	1.0%	No	YES
US 101	Oregon/Embarcadero to University	AM	F	F	Y	3	3	69	69	33	3	0.5%	0.0%	No	No
		PM	F	F	Y	3	3	69	69	3	42	0.0%	0.6%	No	No
US 101	Woodside to Whipple	AM	E	F	Y	3	3	69	69	10	1	0.1%	0.0%	No	No
		PM	F	F	Y	3	3	69	69	1	12	0.0%	0.2%	No	No
SR 84	University to Alameda Co. Line	AM	A	F	N	3	3	69	69	1	14	0.0%	0.2%	No	No
		PM	F	A	N	3	3	69	69	17	1	0.2%	0.0%	No	No
I-280	Saratoga to Lawrence	AM	F	D	Y	3	3	69	69	27	2	0.4%	0.0%	No	No
		PM	D	E	Y	3	3	69	69	2	34	0.0%	0.5%	No	No
I-680	SR 237 to Jacklin	AM	E	D	N	3	3	69	69	2	24	0.0%	0.3%	No	No
		PM	F	D	N	3	3	69	69	30	2	0.4%	0.0%	No	No
I-680	Scott Creek to SR 238	AM	N/A	N/A	N	3	3	69	69	2	22	0.0%	0.3%	No	No
		PM	D	A	N	3	3	69	69	28	2	0.4%	0.0%	No	No
I-680	SR 84 to Bernal	AM	N/A	N/A	N	3	3	69	69	2	21	0.0%	0.3%	No	No
		PM	B	A	N	3	3	69	69	27	2	0.4%	0.0%	No	No
I-680	I-580 to Alcosta	AM	N/A	N/A	N	3	3	69	69	1	9	0.0%	0.1%	No	No
		PM	A	A	N	3	3	69	69	11	1	0.2%	0.0%	No	No
I-580	I-205 to SR 84/1st	AM	N/A	N/A	N	4	4	92	92	1	8	0.0%	0.1%	No	No
		PM	C	A	N	4	4	92	92	10	1	0.1%	0.0%	No	No
I-580	Santa Rita to I-680	AM	N/A	N/A	N	4	4	92	92	1	10	0.0%	0.1%	No	No
		PM	F	A	N	4	4	92	92	13	1	0.1%	0.0%	No	No
I-880	SR 237 to Dixon	AM	D	D	N	3	3	69	69	2	24	0.0%	0.4%	No	No
		PM	F	D	N	3	3	69	69	31	2	0.4%	0.0%	No	No
I-880	Alv.-Niles to Tennyson	AM	N/A	N/A	N	4	4	92	92	5	51	0.1%	0.6%	No	No
		PM	F	B	N	4	4	92	92	65	5	0.7%	0.1%	No	No
SR 237	Zanker to McCarthy	AM	D	F	Y	3	3	69	69	4	46	0.1%	0.7%	No	No
		PM	F	D	Y	3	3	69	69	59	4	0.8%	0.1%	No	No
SR 237	FairOaks to Lawrence	AM	D	D	Y	2	2	44	44	4	49	0.1%	1.1%	No	YES
		PM	C	D	Y	2	2	44	44	62	4	1.4%	0.1%	YES	No

Notes:

¹ Sources: Density-based LOS from VTA 2000 CMP Monitoring Data, Alameda County CMP 2000 LOS Monitoring Report, and San Mateo County CMP 1999 Monitoring Report.

² Capacity assumes 2,300 vehicles per hour per lane (vphpl) for six- or more lane freeways and 2,200 vphpl for four-lane freeways (auxiliary lanes are not included).

Significant and potentially significant impacts are indicated in bold.

full-time residents on site. However, no secondary impacts to transit systems are anticipated.

3. Effects on the Bicycle Network

The addition of housing units under Alternative 5 would not change project impacts to the bicycle system identified in the DEIS. Although more internalized trips could reduce the number of external bicycle trips through the Ellis Street underpass at Highway 101, the project is still expected to result in a significant impact at this location, which requires the mitigation identified as CIR-6. With this mitigation, the impact would be reduced to less than significant.

4. Effects on Pedestrian Facilities

Effects on pedestrian facilities would be the same as presented in the DPEIS.

B. Conclusions

The provision of additional housing as a new mitigation measure for Alternative 5 is not expected to result in any secondary transportation and circulation impacts. All other mitigation measures required for Alternative 5 (Mitigation Measures CIR-1, CIR-3, and CIR-6) would still be required with the provision of additional housing. The configuration for the Moffett Boulevard-Clark Memorial Drive/R.T. Jones Road intersection described under Mitigation Measure CIR-3 would still be needed, even with increased trip internalization to Moffett Field.

Potential freeway impacts would still be considered significant and unavoidable, but the additional mitigation measure would reduce impacts to the regional roadway system, both on nearby segments and on the external segments located more than 16 kilometers (10 miles) from the site.

NASA AMES RESEARCH CENTER
NASA AMES DEVELOPMENT PLAN
FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT
ANALYSIS OF MITIGATED ALTERNATIVE 5